

STATE OF MAINE
2007 GRADE LEVEL EXPECTATIONS FOR GRADES 3-8
Developed from Maine's *Learning Results*

MATHEMATICS

Cluster 1. Numbers and Operation		
Content Standard A: Number and Number Sense: Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to:		
Grade 3	Grade 4	Grade 5
M1A1.3 Read, write, model, and Compare whole numbers using $<$, $>$, and $=$ and order numbers up to 9999 and classify numbers as odd or even for numbers up to 9999 .	M1A1.4 Read, compare, order, classify, and explain whole numbers up to one million.	M1A1.5 Read, compare, order, use, and represent simple fractions (halves, fourths, fifths, and tenths with all numerators) and decimals to hundredths.
M1A2.3 Read, write, model and compare simple fractions with denominators 2,3 and 4	M1A2.4 Read, compare, order, classify, and explain simple fractions through tenths.	
M1A3.3 Demonstrate understanding of the meaning of decimals through hundredths (in money contexts only).	M1A3.4 Demonstrate knowledge of the meaning of decimals and integers and an understanding of how they may be used.	M1A3.5 Use divisibility rules for 2, 5 and 10.
Content Standard B: Computation: Students will understand and demonstrate computation skills (no calculator use for straight computation and numbers used in this section should match those listed for Standard A). Students will be able to:		
Grade 3	Grade 4	Grade 5
M1B1.3 Solve single and multi-step, real-life problems using addition and subtraction with whole numbers with no number greater than 9999 .	M1B1.4 Solve multi-step, real-life problems using the four operations with whole numbers.	M1B1.5 Compute and model all four operations on whole numbers (1-digit divisor, 3-digit dividend) and addition and subtraction with simple fractions with common denominators and decimals to hundredths and do straight computation with these numbers and operations.
	M1B2.4 Solve real-life problems involving addition and subtraction of simple fractions.	M1B2.5 Create, solve, and justify the solution for multi-step, real-life problems involving all four operations on whole numbers (1-digit divisor, 3-digit dividend) and addition and subtraction with simple fractions with common denominators and decimals to hundredths.
M1B4.3 Develop proficiency with the facts and algorithms of addition and subtraction on whole numbers using mental math and a variety of materials, strategies, and technologies with no number greater than 9999 .	M1B4.4 Develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.	
Content Standard I: Discrete Mathematics: Students will understand and apply concepts in discrete mathematics. Students will be able to:		
Grade 3	Grade 4	Grade 5
M1I1.3 Create and use organized lists and Venn diagrams.	M1I1.4 Create and use organized lists, tree diagrams, Venn diagrams and networks.	

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MATHEMATICS

Cluster 1. Numbers and Operation		
Content Standard A: Number and Number Sense: Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to:		
Grade 6	Grade 7	Grade 8
M1A1.6 Read, compare, order, use and represent fractions, (halves, thirds, fourths, fifths, sixths, eighths and tenths with all numerators); and compare, order, use and represent decimals to thousandths and convert between decimals and percentages.	M1A1.7 Read, compare, order, use, and represent fractions, decimals, and percents and convert among different numeral forms (limited to terminating decimals for decimal to fraction conversion) and apply concepts of integers, absolute value and positive exponents.	M1A1.8 Use numbers in a variety of equivalent and interchangeable forms (e.g., integer, fraction, decimal, percent, exponential, and scientific notation) in problem-solving.
M1A3.6 Recognize and apply concepts of prime and composite numbers and use divisibility rules for 2, 3, 4, 5, 6, 9 and 10; and recognize and find factors and multiples of natural numbers.	M1A3.7 Apply concepts of ratios in practical or other mathematical situations.	M1A3.8 Apply concepts of ratios, proportions, percents, and number theory (e.g. primes, factors, and multiples) in practical and other mathematical situations.
Content Standard B: Computation: Students will understand and demonstrate computation skills (no calculator use for straight computation and numbers used in this section should match those listed for Standard A). Students will be able to:		
Grade 6	Grade 7	Grade 8
M1B1.6 Compute and model all four operations with whole numbers, common fractions and decimals to thousandths, and do straight computation with these numbers and operations. Division limited to 2-digit whole number divisors and 3-digit dividends.	M1B1.7 Compute and model all four operations with whole numbers, fractions (including mixed numerals), decimals, and percents applying order of operations and do straight computation with these numbers and operations.	M1B1.8 Compute and model all four operations with whole numbers, fractions, decimals, sets of numbers, and percents, applying the proper order of operations. Note: Includes positive and negative numbers.
M1B2.6 Create, solve, and justify the solution for multi-step, real-life problems with whole numbers, common fractions and decimals to thousandths, with division limited to 2-digit whole number divisors and 3-digit dividends.	M1B2.7 Create, solve, and justify the solution for multi-step, real-life problems with whole numbers, fractions (including mixed numerals), decimals, and percents.	M1B2.8 Create, solve, and justify the solution for multi-step, real-life problems including those with ratio and proportion.

Content Standard I. Discrete Mathematics: There is considerable overlap with other areas and other aspects are more appropriately assessed locally. No Grade Level Expectations in 5-8.

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Maine Department of Education, September 2005

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MATHEMATICS

Cluster 2. Shape and Size		
Content Standard E: Geometry: Students will understand and apply concepts from geometry.		
Grade 3	Grade 4	Grade 5
M2E1.3 Use properties/ attributes (limited to number of sides, number of angles) to identify, describe, and distinguish between triangles and rectangles and lengths of sides to identify squares as special rectangles.	M2E1.4 Describe, model, and classify shapes and figures using applicable properties.	M2E1.5 Use properties/ attributes (limited to number of sides, number of angles, and length of sides, and lines of symmetry) to classify polygons and draw 2-dimensional shapes.
M2E2.3 Identify a line of symmetry for a given shape or answer questions about figures based on lines of symmetry, e.g. "which of the following shapes have one or more lines of symmetry?"	M2E2.4 Experiment with shapes and figures to make generalizations regarding congruency, symmetry, and similarity.	
	M2E3.4 Use transformations such as slides, flips, and rotations.	M2E3.5 Plot non-negative values as points on a number line.
Content Standard F: Measurement: Students will understand and demonstrate measurement skills. Students will be able to:		
Grade 3	Grade 4	Grade 5
M2F1.3 Solve and justify solutions to real-life problems involving the measurement of time, length, and temperature including using a ruler to measure length to the nearest inch and whole centimeter. <i>*Ruler on grade 3,4 &5 tests</i>	M2F1.4 Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	What was here is combined below.
M2F2.3 Select appropriate tools and units to measure length, time, and temperature	M2F2.4- Select measuring tools and units of measurement that are appropriate for what is being measured.	M2F2.5 Solve problems involving direct measures of length, distance, elapsed time, temperature, capacity, mass and weight with measures limited to whole numbers (quarters for lengths) including using a ruler to measure length to the nearest quarter inch and whole centimeter.
		M2F3.5 Find area and perimeter of rectangles with whole numbers (includes formula use) with correct units. <i>Formula sheets as appropriate in all grades.</i>

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MATHEMATICS

Cluster 2. Shape and Size		
Content Standard E: Geometry: Students will understand and apply concepts from geometry.		
Grade 6	Grade 7	Grade 8
M2E1.6 Use properties/ attributes (limited to number of sides, number of angles, and length of sides, lines of symmetry, parallel sides, perpendicular sides, and angles relative to 90°) to classify polygons; and to compare and classify rectangular prisms, including cubes; and triangular prisms and draw 2-dimensional shapes.	M2E1.7 Use properties/ attributes limited to number of vertices, number of edges, number of faces, shapes of faces, and types of angles to identify and distinguish among 3 dimensional figures and draw two-dimensional shapes and three-dimensional figures.	M2E1.8 Compare, classify, and draw two-dimensional shapes and three-dimensional figures.
		M2E2.8 Apply geometric properties to represent and solve real-life problems involving regular and irregular shapes.
M2E3.6 Use ordered pairs as coordinates of points in the first quadrant of a coordinate plane.	M2E3.7 Use a coordinate system to define and locate position.	M2E3.8 Use a coordinate system to define and locate position.
Content Standard F: Measurement: Students will understand and demonstrate measurement skills. Students will be able to:		
Grade 6	Grade 7	Grade 8
M2F1.6 Perform conversions between inches, feet and yards; seconds, minutes and hours; pounds and ounces; and cups, pints, quarts and gallons.	M2F1.7 Perform conversions between pairs within the following groups: inches, feet, yards, and miles; millimeters, centimeters, meters, and kilometers; cups, pints, quarts, and gallons; milliliters and liters; ounces, pounds and tons; grams and kilograms; seconds, minutes, hours, days, weeks, months, and years.	M2F1.8 Demonstrate the structure and use of systems of measurements.
M2F2.6 Solve problems involving direct measures of length, distance, elapsed time, temperature, capacity, mass and weight.	M2F2.7 Solve problems involving unit price, speed and direct measures.	M2F2.8 Develop and use concepts that can be measured directly, or indirectly (e.g., the concept of rate).
M2F3.6 Compute the area and perimeter of triangles and rectangles with whole numbers (formula use), and find the volume of rectangular solids using pictures of blocks or gridded diagram with correct units.	M2F3.7 Given formulas from which to choose, find areas and perimeters of 2-D shapes (includes circles), and volumes of rectangular solids with rational numbers with correct units.	M2F3.8 Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.

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Cluster 3. Mathematical Decision Making		
Content Standard C: Data Analysis and Statistics: Students will understand and apply concepts of data analysis. Students will be able to:		
Grade 3	Grade 4	Grade 5
		M3C1.5 Organize data to find mode, median and range of a set of values.
M3C2.3 Read and interpret displays of data: line plots, tables, tally charts, and bar graphs, identifying least frequent, most frequent (mode*), reading, using and comparing values. *not responsible for this vocabulary	M3C2.4 Read and interpret displays of data.	
Content Standard D: Probability: Students will understand and apply concepts of probability. Students will be able to: In the following GLEs it is expected that students use area and set models.		
Grade 3	Grade 4	Grade 5
M3D2.3 Recognize and describe the likelihood of the occurrence of an event or events using “ always ”, “ impossible ”, “likely”, “not likely” or “equally likely.”	M3D2.4 Estimate probability from a sample of observed outcomes and simulations.	M3D1.5 Find the probabilities of simple events and represent them as fractions (1/2, 1/3, 2/3, 1/4, 2/4, 3/4 eligible).
Content Standard J. Mathematical Reasoning: Due to the difficulty of measuring the Reasoning Indicators independently of other content and the reasoning that is implied in other performance indicators, no indicators from Standard J are included.		

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MATHEMATICS

Cluster 3. Mathematical Decision Making		
Content Standard C: Data Analysis and Statistics: Students will understand and apply concepts of data analysis. Students will be able to:		
Grade 6	Grade 7	Grade 8
M3C1.6 Organize data to find modes, medians, means and ranges for sets of data and displays: Data displays include frequency distributions, tables, line plots, or bar graphs (e.g., given a bar graph, determine the mode, median, range and mean).	M3C1.7 Organize data and analyze patterns and trends in data using modes, medians, means and ranges for sets of data (emphasis on comparing sets begins). Data displays include lists, tables, frequency distributions, line plots, bar graphs or stem and leaf plots.	M3C1.8 Organize and analyze data using mean, median, mode, and range.
Content Standard D: Probability: Students will understand and apply concepts of probability. Students will be able to: In the following GLEs it is expected that students use area and set models.		
Grade 6	Grade 7	Grade 8
M3D1.6 Find the probabilities of simple events and represent them as fractions (simplest form not needed).	M3D1.7 Find the probability of simple events and express the probability as a fraction or a percentage (percentages limited to multiples of 10% and 25%).	M3D1.8 Find the probability of simple events and make predictions by applying the theories of probability.
M3D4.6 Find the number of arrangements of 3 factors with no more than 4 choices per factor (e.g., tree diagram, organized list, pictures).	M3D4.7 Apply the idea of permutation in a problem situation with 6 elements or fewer (e.g., how many ways can the four letters in the word "math" be arranged?).	M3D4.8 Find all possible combinations and arrangements involving a limited number of variables.
Content Standard J. Mathematical Reasoning: Content Standard J. Mathematical Reasoning: Due to the difficulty of measuring the Reasoning Indicators independently of other content and the reasoning that is implied in other performance indicators, no indicators from Standard J are included.		

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MATHEMATICS

Cluster 4. Patterns		
Content Standard G: Patterns, Relations, and Functions: Students will understand that mathematics is the science of patterns, relationships, and functions. Students will be able to:		
Grade 3	Grade 4	Grade 5
M4G1.3 Determine the next term or missing terms in patterns with numbers or shapes.	M4G1.4. Use the patterns of numbers, geometry, and a variety of graphs to solve a problem.	M4G1.5 Translate real-life situations into addition, subtraction, multiplication, or division sentences.
M4G2.3 Translate real-life situations into addition and subtraction sentences.	M4G2.4 Use variables and open sentences to express relationships.	
		M4G3.5 Solve problems involving linear patterns in tables, graphs, words or rules using whole numbers.
Content Standard H: Algebra Concepts: Students will understand and apply algebraic concepts. Students will be able to:		
Grade 3	Grade 4	Grade 5
	M4H1.4 Develop and evaluate simple formulas in problem-solving contexts.	M4H1.6 Evaluate formulas with no more than 2 variables using whole numbers.
M4H2.3 Solve for a missing number or find the replacement for a symbol in addition and subtraction sentences using whole numbers.	M4H2.4 Find replacements for variables that make simple number sentences true.	
		M4H6.5 Solve one-step equations using addition, subtraction, or multiplication with a variable. Values for variables are limited to whole numbers.
Content Standard K. Communication: Students will reflect upon and clarify their understanding of mathematical ideas and relationships. Students will be able to:		
Grade 3	Grade 4	Grade 5
M4K1.3 Complete tables, bar graphs and pictographs.	M4K1.4 Use simple tables and graphs to communicate ideas and information in a concise and clear manner.	M4K2.5 Read and use statistics, tables, and graphs to communicate ideas and information. Data displays include frequency distributions, tables, line plots, histograms or bar graphs and pie charts/circle graphs (read only).

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MATHEMATICS

Cluster 4. Patterns		
Content Standard G: Patterns, Relations, and Functions: Students will understand that mathematics is the science of patterns, relationships, and functions. Students will be able to:		
Grade 6	Grade 7	Grade 8
M4G1.6 Translate real-life situations into addition, subtraction, multiplication, and division sentences with whole numbers (mix of operations included).	M4G1.7 Translate real-life linear situations into equations (limited to one step).	M4G1.8 Describe and represent relationships with tables, graphs, and equations.
M4G3.6 Solve problems involving linear patterns in the form of tables, graphs, words, rules and equations using whole numbers, decimals to hundredths and simple fractions.	M4G3.7 Solve problems involving linear patterns in the form of tables, graphs, words, rules or equations using rational numbers (including signed values).	M4G3.8 Use patterns and multiple representations to solve problems.
Content Standard H: Algebra Concepts: Students will understand and apply algebraic concepts. Students will be able to:		
Grade 6	Grade 7	Grade 8
M4H1.6 Evaluate formulas with no more than 3 variables using the computation specified in M1B1.6.	M4H1.7 Evaluate formulas with no more than 3 variables using the computation specified in M1B1.7.	M4H1.8 Use concepts of variables and expressions.
		M4H3.8 Analyze tables and graphs to identify properties and relationships in a practical context.
	M4H4.7 Graph inequality statements on a number line.	M4H4.8 Use graphs to represent two-variable equations.
M4H6.6 Solve one-step equations using whole numbers with all four operations.	M4H6.7 Solve two-step equations using integers and positive rational numbers.	M4H6.8 Find solutions for unknown quantities in linear equations and in simple equations and inequalities.
Content Standard K. Communication: Students will reflect upon and clarify their understanding of mathematical ideas and relationships. Students will be able to:		
Grade 6	Grade 7	Grade 8
M4K2.6 Read and use statistics, tables, and graphs to communicate ideas and information. Data displays include frequency distributions, tables, line plots, histograms or bar graphs and pie charts/circle graphs (read only).	M4K2.7 Read and use statistics, tables, and graphs to communicate ideas and information. Data displays include lists, tables, frequency distributions, line plots, bar graphs, stem and leaf plots or 1st quadrant scatterplots and line graphs and pie charts/circle graphs (read only).	M4K2.8 Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.

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MATHEMATICS
Grade 3

Cluster 1 – Numbers and Operations	Cluster 2 – Shape and Size	Cluster 3 – Mathematical Decision Making	Cluster 4 - Patterns
<p>A. Numbers and Number Sense M1A1.3 Read, write, model, compare whole numbers using <, >, and = and order numbers up to 9999 and classify numbers as odd or even for numbers up to 9999.</p> <p>M1A2.3 Read, write, model and compare simple fractions with denominators 2,3 and 4</p> <p>M1A3.3 Demonstrate understanding of the meaning of decimals through hundredths (in money contexts only).</p> <p>B. Computation M1B1.3 Solve single and multi-step, real-life problems using addition and subtraction with whole numbers with no number greater than 9999.</p> <p>M1B4.3 Develop proficiency with the facts and algorithms of addition and subtraction on whole numbers using mental math and a variety of materials, strategies, and technologies with no number greater than 9999.</p> <p>I. Discrete Mathematics M1I1.3 Create and use organized lists and Venn diagrams.</p>	<p>E. Geometry M2E1.3 Use properties/ attributes (limited to number of sides, number of angles) to identify, describe, and distinguish between triangles and rectangles and lengths of sides to identify squares as special rectangles.</p> <p>M2E2.3 Identify a line of symmetry for a given shape or answer questions about figures based on lines of symmetry, e.g. “which of the following shapes have one or more lines of symmetry?”</p> <p>F. Measurement M2F1.3 Solve and justify solutions to real-life problems involving the measurement of time, length, and temperature including using a ruler to measure length to the nearest inch and whole centimeter.</p> <p>M2F2.3 Select appropriate tools and units to measure length, time, and temperature</p> <p><i>*Ruler on grade 3,4 &5 tests</i></p>	<p>C. Data Analysis and Statistics M3C2.3 Read and interpret displays of data: line plots, tables, tally charts, and bar graphs, identifying least frequent, most frequent (mode*), reading, using and comparing values. *not responsible for this vocabulary</p> <p>D. Probability M3D2.3 Recognize and describe the likelihood of the occurrence of an event using “always”, “impossible”, “likely”, “not likely” or “equally likely.”</p>	<p>G. Patterns, Relations, and Functions M4G1.3 Determine the next term or missing terms in patterns with numbers or shapes.</p> <p>M4G2.3 Translate real-life situations into addition and subtraction sentences.</p> <p>H. Algebra Concepts M4H2.3 Solve for a missing number or find the replacement for a symbol in addition and subtraction sentences using whole numbers.</p> <p>K. Communication M4K1.3 Complete tables, bar graphs and pictographs.</p>

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MATHEMATICS
Grade 4

Cluster 1 – Numbers and Operations	Cluster 2 – Shape and Size	Cluster 3 – Mathematical Decision Making	Cluster 4 - Patterns
<p>A. Numbers and Number Sense M1A1.4 Read, compare, order, classify, and explain whole numbers up to one million.</p> <p>M1A2.4 Read, compare, order, classify, and explain simple fractions through tenths.</p> <p>M1A3.4 Demonstrate knowledge of the meaning of decimals and integers and an understanding of how they may be used.</p> <p>B. Computation M1B1.4 Solve multi-step, real-life problems using the four operations with whole numbers.</p> <p>M1B2.4 Solve real-life problems involving addition and subtraction of simple fractions.</p> <p>M1B4.4 Develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.</p> <p>I. Discrete Mathematics M1I1.4 Create and use organized lists, tree diagrams, Venn diagrams and networks.</p>	<p>E. Geometry M2E1.4 Describe, model, and classify shapes and figures using applicable properties.</p> <p>M2E2.4 Experiment with shapes and figures to make generalizations regarding congruency, symmetry, and similarity.</p> <p>M2E3.4 Use transformations such as slides, flips, and rotations.</p> <p>F. Measurement M2F1.4 Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.</p> <p>M2F2.4 Select measuring tools and units of measurement that are appropriate for what is being measured.</p>	<p>C. Data Analysis and Statistics M3C2.4 Read and interpret displays of data.</p> <p>D. Probability M3D2.4 Estimate probability from a sample of observed outcomes and simulations.</p>	<p>G. Patterns, Relations, and Functions M4G1.4. Use the patterns of numbers, geometry, and a variety of graphs to solve a problem.</p> <p>M4G2.4 Use variables and open sentences to express relationships.</p> <p>H. Algebra Concepts M4H1.4 Develop and evaluate simple formulas in problem-solving contexts.</p> <p>M4H2.4 Find replacements for variables that make simple number sentences true.</p> <p>K. Communication M4K1.4 Use simple tables and graphs to communicate ideas and information in a concise and clear manner.</p>

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MATHEMATICS
Grade 5

Cluster 1 – Numbers and Operations	Cluster 2 – Shape and Size	Cluster 3 – Mathematical Decision Making	Cluster 4 - Patterns
<p>A. Numbers and Number Sense M1A1.5 Read, compare, order, use, and represent simple fractions (halves, fourths, fifths, and tenths with all numerators) and decimals to hundredths.</p> <p>M1A3.5 Use divisibility rules for 2, 5 and 10.</p> <p>B. Computation M1B1.5 Compute and model all four operations on whole numbers (1-digit divisor, 3-digit dividend) and addition and subtraction with simple fractions with common denominators and decimals to hundredths and do straight computation with these numbers and operations.</p> <p>M1B2.5 Create, solve, and justify the solution for multi-step, real-life problems involving all four operations on whole numbers (1-digit divisor, 3-digit dividend) and addition and subtraction with simple fractions with common denominators and decimals to hundredths.</p>	<p>E. Geometry M2E1.5 Use properties/ attributes (limited to number of sides, number of angles, and length of sides, and lines of symmetry) to classify polygons and draw 2-dimensional shapes.</p> <p>M2E3.5. Plot non-negative values as points on a number line.</p> <p>F. Measurement M2F2.5 Solve problems involving direct measures of length, distance, elapsed time, temperature, capacity, mass and weight with measures limited to whole numbers (quarters for lengths) including using a ruler to measure length to the nearest quarter inch and whole centimeter.</p> <p>M2F3.5 Find area and perimeter of rectangles with whole numbers (includes formula use) with correct units.</p> <p><i>Formula sheets as appropriate in all grades.</i></p>	<p>C. Data Analysis and Statistics M3C1.5 Organize data to find mode, median and range of a set of values.</p> <p>D. Probability M3D1.5 Find the probabilities of simple events and represent them as fractions (1/2, 1/3, 2/3, 1/4, 2/4, 3/4 eligible).</p>	<p>G. Patterns, Relations, and Functions M4G1.5 Translate real-life situations into addition, subtraction, multiplication, or division sentences.</p> <p>M4G3.5 Solve problems involving linear patterns in tables, graphs, words or rules using whole numbers.</p> <p>H. Algebra Concepts M4H1.6 Evaluate formulas with no more than 2 variables using whole numbers.</p> <p>M4H6.5 Solve one-step equations using addition, subtraction, or multiplication with a variable. Values for variables are limited to whole numbers.</p> <p>K. Communication M4K2.5 Read and use statistics, tables, and graphs to communicate ideas and information. Data displays include frequency distributions, tables, line plots, histograms or bar graphs and pie charts/circle graphs (read only).</p>

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MATHEMATICS
Grade 6

Cluster 1 – Numbers and Operations	Cluster 2 – Shape and Size	Cluster 3 – Mathematical Decision Making	Cluster 4 - Patterns
<p>A. Numbers and Number Sense M1A1.6 Read, compare, order, use and represent fractions, (halves, thirds, fourths, fifths, sixths, eighths and tenths with all numerators); and compare, order, use and represent decimals to thousandths and convert between decimals and percentages.</p> <p>M1A3.6 Recognize and apply concepts of prime and composite numbers and use divisibility rules for 2, 3, 4, 5, 6, 9 and 10; and recognize and find factors and multiples of natural numbers.</p> <p>B. Computation M1B1.6 Compute and model all four operations with whole numbers, common fractions and decimals to thousandths, and do straight computation with these numbers and operations. Division limited to 2-digit whole number divisors and 3-digit dividends.</p> <p>M1B2.6 Create, solve, and justify the solution for multi-step, real-life problems with whole numbers, common fractions and decimals to thousandths, with division limited to 2-digit whole number divisors and 3-digit dividends.</p>	<p>E. Geometry M2E1.6 Use properties/ attributes (limited to number of sides, number of angles, and length of sides, lines of symmetry, parallel sides, perpendicular sides, and angles relative to 90°) to classify polygons; and to compare and classify rectangular prisms, including cubes; and triangular prisms and draw 2-dimensional shapes.</p> <p>M2E3.6 Use ordered pairs as coordinates of points in the first quadrant of a coordinate plane.</p> <p>F. Measurement M2F1.6 Perform conversions between inches, feet and yards; seconds, minutes and hours; pounds and ounces; and cups, pints, quarts and gallons.</p> <p>M2F2.6 Solve problems involving direct measures of length, distance, elapsed time, temperature, capacity, mass and weight.</p> <p>M2F3.6 Compute the area and perimeter of triangles and rectangles with whole numbers (formula use), and find the volume of rectangular solids using pictures of blocks or gridded diagram with correct units.</p>	<p>C. Data Analysis and Statistics M3C1.6 Organize data to find modes, medians, means and ranges for sets of data and displays: Data displays include frequency distributions, tables, line plots, or bar graphs (e.g., given a bar graph, determine the mode, median, range and mean).</p> <p>D. Probability M3D1.6 Find the probabilities of simple events and represent them as fractions (simplest form not needed).</p> <p>M3D4.6 Find the number of arrangements of 3 factors with no more than 4 choices per factor (e.g., tree diagram, organized list, pictures).</p>	<p>G. Patterns, Relations, and Functions M4G1.6 Translate real-life situations into addition, subtraction, multiplication, and division sentences with whole numbers (mix of operations included).</p> <p>M4G3.6 Solve problems involving linear patterns in the form of tables, graphs, words, rules and equations using whole numbers, decimals to hundredths and simple fractions.</p> <p>H. Algebra Concepts M4H1.6 Evaluate formulas with no more than 3 variables using the computation specified in M1B1.6.</p> <p>M4H6.6 Solve one-step equations using whole numbers with all four operations.</p> <p>K. Communication M4K2.6 Read and use statistics, tables, and graphs to communicate ideas and information. Data displays include frequency distributions, tables, line plots, histograms or bar graphs and pie charts/circle graphs (read only).</p>

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Maine Department of Education, September 2005

STATE OF MAINE
2007 GRADE LEVEL EXPECTATIONS FOR GRADES 3-8
Developed from Maine's *Learning Results*

MATHEMATICS
Grade 7

Cluster 1 – Numbers and Operations	Cluster 2 – Shape and Size	Cluster 3 – Mathematical Decision Making	Cluster 4 - Patterns
<p>A. Numbers and Number Sense M1A1.7 Read, compare, order, use, and represent fractions, decimals, and percents and convert among different numeral forms (limited to terminating decimals for decimal to fraction conversion) and apply concepts of integers, absolute value and positive exponents.</p> <p>M1A3.7 Apply concepts of ratios in practical or other mathematical situations.</p> <p>B. Computation M1B1.7 Compute and model all four operations with whole numbers, fractions (including mixed numerals), decimals, and percents applying order of operations and do straight computation with these numbers and operations.</p> <p>M1B2.7 Create, solve, and justify the solution for multi-step, real-life problems with whole numbers, fractions (including mixed numerals), decimals, and percents.</p>	<p>E. Geometry M2E1.7 Use properties/ attributes limited to number of vertices, number of edges, number of faces, shapes of faces, and types of angles to identify and distinguish among 3 dimensional shapes and draw two-dimensional shapes and three-dimensional figures</p> <p>M2E3.7 Use a coordinate system to define and locate position.</p> <p>F. Measurement M2F1.7 Perform conversions between pairs within the following groups: inches, feet, yards, and miles; millimeters, centimeters, meters, and kilometers; cups, pints, quarts, and gallons; milliliters and liters; ounces, pounds and tons; grams and kilograms; seconds, minutes, hours, days, weeks, months, and years.</p> <p>M2F2.7 Solve problems involving unit price, speed and direct measures.</p> <p>M2F3.7 Given formulas from which to choose, find areas and perimeters of 2-D shapes (includes circles), and volumes of rectangular solids with rational numbers with correct units.</p>	<p>C. Data Analysis and Statistics M3C1.7 Organize data and analyze patterns and trends in data using modes, medians, means and ranges for sets of data (emphasis on comparing sets begins). Data displays include lists, tables, frequency distributions, line plots, bar graphs or stem and leaf plots.</p> <p>D. Probability M3D1.7 Find the probability of simple events and express the probability as a fraction or a percentage (percentages limited to multiples of 10% and 25%).</p> <p>M3D4.7 Apply the idea of permutation in a problem situation with 6 elements or fewer (e.g., how many ways can the four letters in the word “math” be arranged?).</p>	<p>G. Patterns, Relations, and Functions M4G1.7 Translate real-life linear situations into equations (limited to one step).</p> <p>M4G3.7 Solve problems involving linear patterns in the form of tables, graphs, words, rules or equations using rational numbers (including signed values).</p> <p>H. Algebra Concepts M4H1.7 Evaluate formulas with no more than 3 variables using the computation specified in M1B1.7.</p> <p>M4H4.7 Graph inequality statements on a number line.</p> <p>M4H6.7 Solve two-step equations using integers and positive rational numbers.</p> <p>K. Communication M4K2.7 Read and use statistics, tables, and graphs to communicate ideas and information. Data displays include lists, tables, frequency distributions, line plots, bar graphs, stem and leaf plots or 1st quadrant scatterplots and line graphs and pie charts/circle graphs (read only).</p>

STATE OF MAINE
2007 GRADE LEVEL EXPECTATIONS FOR GRADES 3-8
Developed from Maine's *Learning Results*

MATHEMATICS
Grade 8

Cluster 1 – Numbers and Operations	Cluster 2 – Shape and Size	Cluster 3 – Mathematical Decision Making	Cluster 4 - Patterns
<p>A. Numbers and Number Sense M1A1.8 Use numbers in a variety of equivalent and interchangeable forms (e.g., integer, fraction, decimal, percent, exponential, and scientific notation) in problem-solving.</p> <p>M1A3.8 Apply concepts of ratios, proportions, percents, and number theory (e.g. primes, factors, and multiples) in practical and other mathematical situations.</p> <p>B. Computation M1B1.8 Compute and model all four operations with whole numbers, fractions, decimals, sets of numbers, and percents, applying the proper order of operations.</p> <p>Note: Includes positive and negative numbers.</p> <p>M1B2.8 Create, solve, and justify the solution for multi-step, real-life problems including those with ratio and proportion.</p>	<p>E. Geometry M2E1.8 Compare, classify, and draw two-dimensional shapes and three-dimensional figures.</p> <p>M2E2.8 Apply geometric properties to represent and solve real-life problems involving regular and irregular shapes.</p> <p>M2E3.8 Use a coordinate system to define and locate position.</p> <p>F. Measurement M2F1.8 Demonstrate the structure and use of systems of measurements.</p> <p>M2F2.8 Develop and use concepts that can be measured directly, or indirectly (e.g., the concept of rate).</p> <p>M2F3.8 Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.</p>	<p>C. Data Analysis and Statistics M3C1.8 Organize and analyze data using mean, median, mode, and range.</p> <p>D. Probability M3D1.8 Find the probability of simple events and make predictions by applying the theories of probability.</p> <p>M3D4.8 Find all possible combinations and arrangements involving a limited number of variables.</p>	<p>G. Patterns, Relations, and Functions M4G1.8 Describe and represent relationships with tables, graphs, and equations.</p> <p>M4G3.8 Use patterns and multiple representations to solve problems.</p> <p>H. Algebra Concepts M4H1.8 Use concepts of variables and expressions.</p> <p>M4H3.8 Analyze tables and graphs to identify properties and relationships in a practical context.</p> <p>M4H4.8 Use graphs to represent two-variable equations.</p> <p>M4H6.8 Find solutions for unknown quantities in linear equations and in simple equations and inequalities.</p> <p>K. Communication M4K2.8 Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.</p>

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